QRS COMPLEXITY AND OUTCOME OF CRT-D THERAPY IN LBBB PATIENTS FROM THE MADIT-CRT

ACC Moderated Poster Contributions
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Background: Heart failure patients with left bundle branch block (LBBB) benefit from cardiac resynchronization therapy (CRT). We aimed to determine whether QRS morphology assessed by QRS complexity might identify clinical CRT non-responders.

Methods: Resting supine 12-lead ECG was obtained from Holter recordings performed before implant in 661 patients with LBBB who received CRT-D. QRS complexity were computed automatically using Mortara SuperECG algorithm.

Results: During a mean 2-year follow-up, 89 patients (13%) developed HF event or death. QRS duration was shorter in patients with than without HF event or death (162+/−23 ms vs. 168 +/- 20 ms; p=0.005). QRS complexity was higher in patients with vs. without events: 28.3+/−16.3% vs 22.8+/−12.4%; p=0.002. Primary endpoint was predicted by higher QRS complexity: HR = 1.21 per 10% increase (95% CI: 1.06-1.37; p=0.003) and by lower QRS duration: HR = 0.90 (95% CI: 0.811-0.998). Figure shows probability of primary endpoint for QRS complexity in fourth quartile (Q4>27%) vs. three lower quartiles (Q1-Q3). When analyzing difference in change in LVESV between baseline and 12 months for every 10% increase in QRS complexity there is a 3% less decrease in LVESV (p<0.001).

Conclusions: QRS complexity identifies LBBB patients who benefit from CRT-D therapy; lower complexity is associated with more pronounced LV volume reduction and with less cardiac events. This automatic method might assist physicians in further optimizing CRT-D therapy in LBBB patients.

![Graph showing cumulative probability of HF or Death vs. QRS complexity quartiles.](image-url)